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Harvests in various fisheries for salmonids, Atlantic salmon returns to rivers and environmental conditions in Labrador, 2005

Captures de salmonidés au cours de diverses pêches, retours de saumons atlantiques dans les cours d'eau et conditions environnementales au Labrador, 2005

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ABSTRACT

This paper summarizes information on angling and subsistence fisheries catch statistics for Labrador in 2005. The total return information collected from counting facilities is summarized. Environmental data collected at gauging stations is also provided. Landings recorded by the angling fishery were 1,824 small salmon retained, 5,982 small salmon released, 292 large salmon retained and 970 large salmon released. Subsistence fisheries in Labrador recorded landings of 13,253 Atlantic salmon weighing 31,914 kg, 10,949 Arctic charr weighing 16,764 kg, and 14,688 sea run brook trout weighing 11,676 kg. Returns to the four counting facilities in Labrador are documented and show higher returns of small and large salmon in 2005 compared to other years. In general, water levels in northern Labrador were below average and near minimum water levels during most of the season into the second or third week of August. For the remainder of the season water levels were near the mean water level. In southern Labrador water levels were near minimum levels at the beginning of the season. Late June water levels increased to mean water levels to maximum water levels in July and August. Below average water levels continued into the fall.

RÉSUMÉ

Ce document résume les données sur la pêche sportive et les captures dans le cadre des pêches de subsistance au Labrador, en 2005. L'information sur le total des retours recueillie aux installations de dénombrement y est aussi résumée. On y trouve également les données environnementales recueillies aux stations hydrométriques. Les prises déclarés de la pêche sportive étaient de 1 824 petits saumons conservés, 5 982 petits saumons relâchés, 292 gros saumons conservés et 970 gros saumons relâchés. Les captures déclarées des pêches de subsistance au Labrador sont de 13 253 saumons atlantiques, d'un poids de 31 914 kg, 10 949 ombles chevaliers, pesant 16 764 kg et 14 688 ombles de fontaine anadromes, pesant 11 676 kg. Les retours aux quatre installations de dénombrement du Labrador sont documentés et leur total en petits et en gros saumons est supérieur en 2005 à celui d'autres années. En général, les niveaux d'eau du nord du Labrador étaient inférieurs à la moyenne et près des niveaux minimaux pendant presque toute la saison, jusqu'à la deuxième ou la troisième semaine d'août. Pendant le reste de la saison, ils sont demeurés près de la moyenne. Dans le sud du Labrador, les niveaux d'eau étaient près des niveaux minimaux au début de la saison. À la fin de juin, ils ont augmenté jusqu'au niveau moyen de façon à atteindre leur niveau maximal en juillet et août. Les niveaux inférieurs à la moyenne se sont maintenus à l'automne.

INTRODUCTION

In 1992, several major changes were introduced to the management of Atlantic salmon (*Salmo salar* L.) in Newfoundland and Labrador. A five-year moratorium was placed on commercial salmon fishing in the island portion of the province. Quotas for the Labrador commercial fishery, first introduced in 1990, were further reduced and a voluntary retirement of commercial salmon licences was instituted for the entire province. Beginning in 1997, the commercial fishery was closed in the Straits area of Labrador in Salmon Fishing Area (SFA) 14B and then in 1998, it was closed in the remaining SFAs 1 and 2 (Fig. 1). Fishers were offered a buyout which most accepted.

In response to the Supreme Court of Canada decision interpreting Section 35 of the Constitution Act of 1982, the Department of Fisheries and Oceans provided resource access to Aboriginal groups for food, social and ceremonial purposes (FSC). In 1999-2005, a FSC or subsistence fishery of 10 t was available for members of the Labrador Inuit Association in the north as well as the Lake Melville area, both located in SFA 1. The Innu Nation also fish for salmon in Lake Melville from the community of Sheshatshiu and on the north coast from the community of Natuashish. They generally restrict themselves to harvests of around 3 t. Beginning in 2000 and continuing into 2005, residents of Labrador were able to fish in the sea for brook trout (*Salvelinus fontinalis* Mitchill) and Arctic charr (*Salvelinus alpinus* L.) with a permitted bycatch of four salmon. In 2004-05, members of the Labrador Métis Nation on the south coast of Labrador negotiated a subsistence fishery of 10 t with the Department of Fisheries and Oceans in the area between Fish Cove Point and Cape St. Charles, located in SFA 2.

The west Greenland commercial salmon fishery, which was closed for the 1993 and 1994 fishing seasons, was re-opened in 1995 and closed again in 1999, leaving only a small subsistence fishery in 2000. In 2001, the commercial Greenland fishery was opened with a structured quota system that depended on abundance based on in-season catches and historical averages to determine potential landings. Although there have been no recent tagging studies to document the distribution of Labrador salmon at sea, some Labrador origin multi-sea winter salmon may be caught in the Greenland fishery similar to what was shown for Labrador stocks in earlier studies by Pratt et al. (1974). In 2002-03, the Greenland fishery was restricted to a local fishery of 22 t and in 2004-05 it was reduced to a subsistence consumption fishery only, estimated to be around 20 t.

There are also harvests of salmon in the angling fishery in Labrador. In 1992 and 1993, a quota on the number of fish that could be retained was introduced. The quota was assigned for an entire SFA and was not administered on an individual river basis. Only hook-and-release fishing was permitted after the quota was caught. In 1994, quotas for the angling fishery were eliminated. In place of quotas, for Labrador, the season bag limit for retained salmon was lowered from eight to six fish, only two of which could be large salmon. In 1995 and 1996, the season bag limit for the angling fishery remained at six fish but only one large salmon could be retained. In 1999 and 2000, the angling fishery was restricted to a seasonal limit of four salmon retained, one of which could be large, and a daily limit of four salmon could be hooked-and-released. In 1999, use of barbless hooks became mandatory. In 2001, as part of a 2001-05 Management Plan, several additional rivers in southern Labrador crossed by the new Trans Labrador Highway were added to the list of scheduled rivers and restricted to individual bag limits of two small salmon retained. In order to identify legally caught salmon, anglers were issued tags to attach

through the mouth and gills of retained salmon. In 2005, the Management Plan maintained these limits.

The purpose of this paper is to document harvests of salmon in subsistence fisheries and angling, to document the returns of small and large salmon to counting facilities and to describe the environmental conditions in Labrador for 2005.

METHODS

ANGLING FISHERIES

Catch and effort data from the angling fishery in northern (SFA 1) and southern Labrador (SFA 2) were collected by Department of Fisheries and Oceans (DFO) enforcement staff in conjunction with angling reports submitted by commercial sports camp operators and processed by DFO Science Branch (Fig. 1). Procedures for the collection and compilation of angling and commercial fishery data are described by Ash and O'Connell (1987). For purposes of separating 1SW salmon from 2SW salmon in angling fisheries, small salmon are defined as those salmon less than 63 cm and will be mainly 1SW (grilse) in age. Large salmon are those salmon equal to or greater than 63 cm and will be mainly 2SW and older in age. A rod day is any day or portion of a day during which fishing takes place.

In 1994, a new system, viz. the License Stub Return System (LSRS) was initiated for collecting angling statistics in Newfoundland and Labrador. It is based on attaching to the provincial angling licence a detachable stub upon which the angler can record details of where and when the fishing activity took place and the numbers of small and large salmon caught and released. The Catch Per Unit Effort (CPUE) is calculated by dividing the catch data (salmon retained + released) by the effort expenditure (the number of rod days) of the angler (O'Connell et al. 1998).

The lack of comparability of DFO angling statistics and the LSRS was a concern, therefore, the data collected by the Conservation and Protection (C&P) staff and the camp operator data will continue to be used for Labrador in SFA 1. For SFA 2, a blend of LSRS and camp operator data was used; whereby camp operator data was used for Eagle and Sand Hill rivers and LSRS data for all other rivers. The retained catches reported by these two methods were similar. For SFA 14B rivers, the catch statistics for 1996-2005 were derived from the License Stub Return System.

The Management Plan for the angling fishery in Labrador was as follows:

Season: 15 June to 15 September

Catch limits: four salmon per season, one of which can be large; except on Class III rivers where only two small salmon could be retained for the season

Hook and release limits: four per day

SUBSISTENCE FISHERIES

In 2005, there were four subsistence fisheries harvesting salmonids in Labrador: 1 – LIA (Labrador Inuit Association, presently the Nunatsiavut Government) members fishing in the northern Labrador coastal communities of Rigolet, Makkovik, Hopedale, Postville, and Nain and in Lake Melville; 2 – Innu Nation members fishing in Natuashish and in Lake Melville from the community of Sheshatshiu; 3 – Labrador residents fishing in coastal communities in northern Labrador from Davis Inlet to Cape Chidley, Lake Melville and coastal communities in southern Labrador from Cartwright to Cape St. Charles and, 4 – LMN (Labrador Métis Nation) members fishing in southern Labrador from Fish Cove Point to Cape St. Charles. The LIA, Innu, and LMN fisheries were self-regulated by Aboriginal Fishery Guardians hired by these groups as well as the Department of Fisheries and Oceans Fishery Officer and Guardian staff. The DFO staff are also responsible for regulating the resident fishery.

For the LIA, LMN and resident fisheries, tags for salmon were issued on an individual fisher basis to attach to salmon so that legally caught salmon could be identified. There was a catch limit on charr and trout combined of 50 fish per designate or license holder. Furthermore, there is a limit of one designate or licence holder per household. Catch statistics were derived from logbooks issued to each fisher. The Innu Nation guardians collected catch statistics by maintaining a daily record of landings per family. Total catches were estimated by adjusting the logbook catches proportionately to the number of fishers reporting out of the total designated/licenced.

A summary of the year 2005 Management Plans for the four subsistence fisheries as they pertain to salmon follows:

LABRADOR INUIT ASSOCIATION

The conditions for the LIA Communal fishery were as follows:

Harvest Limits: an allocation of 10 t of salmon for the season for that portion of coastal Labrador extending from Fish Cove Point, north to Cape Chidley, including Lake Melville (Zone 1)

Fishing Season: May 14-July 9 and July 19-August 14 in Goose Bay, North West River and Mud Lake, May 14-August 31 in Rigolet, June 1-August 31 in Makkovik and Postville, June 1-September 30 in Hopedale and Nain

INNU NATION

The Community Guidelines for the Innu Nation fishery were as follows:

Harvest limits: thirty per household with a 1,500 community total for the season. Only fishers or their designates were allowed to fish in Lake Melville for an allocation of 3.0 t and 0.5 t in Natuashish

Fishing Season: mid-June to end of 1st week of August and mid-June to end of July for Sheshatshiu in Lake Melville

LABRADOR MÉTIS NATION

The conditions for the LMN Communal fishery were as follows:

Harvest limits: an allocation of 10 t permitted to be harvested for the season in the area from Fish Cove Point to Cape St. Charles

Fishing Season: July 7-August 15

LABRADOR RESIDENTS

The Management Plan for the Labrador Resident fishery was as follows:

Catch limits: four salmon per licence with a limit of 50 trout or charr

Fishing Season: July 11-30 (Fish Cove Point to Bolsters Rock) and July 11-23 (Bolsters Rock to Cape Charles) in southern Labrador, June 15-July 2 and July 22-August 6 (Kenamu closes July 30th) (Cape Rouge to Fish Cove Point (including Lake Melville)) and June 17-July 3 (Cape Rouge to Davis Inlet) and July 1-17 (Davis Inlet to Cape Chidley) in northern Labrador

TOTAL SALMON RETURNS TO RIVERS

Total returns to rivers in Labrador are available for six river systems and one tributary. Total returns have been previously reported by Lowe and Mullins (1996) for Forteau Brook and Mullins and Caines (1998) for Pinware River (updated by Mullins, pers. comm.), by Reddin et al. (1996) for Sand Hill River, by Reddin and Short (2000) for Big Brook, and by Reddin et al. (2000) for English River. In 2002, there was a counting fence in operation on Muddy Bay Brook (Dykes River) for the first time. The counting fence on Southwest Brook, a tributary to Paradise River, was in operation since 1998. However, this counting facility was not in operation in 2000. Muddy Bay Brook and Southwest Brook returns were reported for 2002-04 by Reddin et al. (2005). Total returns to rivers include counts at counting fence traps plus downstream angling catches as well as estimates of hook and release mortalities, which are assessed at 10% of the number of salmon hooked and released.

ENVIRONMENTAL DATA

Environmental data consisting of water flow conditions are collected annually from a system of gauging stations set on various rivers which are operated by Environment Canada. Several of these stations have automated data collection platforms with provision for downloading data via satellite. The Province of Newfoundland and Labrador through the Department of Environment and Labour is responsible for downloading the data and provides it in near-real time; albeit with no quality control. Data are archived by Environment Canada after quality control and made available from the Environment Canada Hydat System. Flow data from Alexis, Eagle, Naskaupi, and Ugjoktok rivers were selected to be representative of conditions on Labrador salmon rivers in 2005.

RESULTS AND DISCUSSION

ANGLING SALMON FISHERY DATA

The angling data for 2005 was compared to the previous 5-year mean (2000-04). In SFA 1, the total catch (small and large salmon combined) of 1,464 in 2005 increased over the 5 year mean (2000-04) by 5% (Table 1). Of the previous 5 years, the catch was 53% lower in 2002 and in 2004 it was 28% higher (3 of the 5 years had higher catches than in 2005). In SFA 2, the total catch of 5,830 was greater than the previous 5 year mean by 6.3%. Of the previous 5 years, the catch in 2003 was 16% lower and in 2000 it was 8% higher than in 2005 (Table 2). In SFA 14B, the total catch of 1,774 was 30% lower than the previous 5 year mean. The highest catch rate of the previous 5 years was 103% higher than in 2005 and took place in the year 2000 (Table 3). In 2005, the total Labrador angling catch in all SFAs was 9,068 salmon including hooked and released fish which was 3.5% lower than levels the total angling experienced by the previous 5 year mean. Of the previous 5 years, the catch in 2002 was 8% lower and in 2000 it was 25% higher than in 2005 (Table 4). The catch of small salmon was 7,806 (1,824 retained and 5,982 released) and large salmon was 1,262 (292 retained and 970 released). The proportion of salmon released by anglers in Labrador has been increasing in recent years. It includes up to 77% of the total catch. In total, there were 6,952 small and large salmon reported to have been hooked and released in 2005 (Tables 1-4).

SUBSISTENCE FISHERIES DATA

In 2005, the following landings of salmon were reported for the subsistence fisheries in Labrador:

	Small salmon		Large salmon		Total	
	Number	**Weight (kg)**	**Number**	**Weight (kg)**	**Number**	**Weight (kg)**
SFA 1	4,958	10,116	1,687	6,930	6,644	17,046
SFA 2	5,479	10,922	1,130	3,946	6,609	14,868
TOTAL	**10,436**	**21,038**	**2,817**	**10,876**	**13,253**	**31,914**

In total, there were about 13,250 salmon reported by subsistence fisheries in Labrador with a total weight of about 31,900 kg. In SFA 1 there was a slight decrease, while in SFA 2 there was a slight increase in the number and weight of salmon harvested over 2004. The 2005 total food fishery landings of small and large salmon in Labrador are 1% higher than in 2004. Food fishery landings are listed in Table 5 for those years of available data.

In 2005, the following landings of charr and trout were reported for the subsistence fisheries in Labrador:

	Charr		Trout		Total (Charr + Trout)	
	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
SFA 1	6,880	12,246	9,562	7,557	16,442	19,803
SFA 2	4,069	4,518	5,126	4,119	9,195	8,637
TOTAL	**10,949**	**16,764**	**14,688**	**11,676**	**25,637**	**28,440**

In total, there were 10,949 charr with a total weight of 16,764 kg and 14,688 brook trout with a total weight of 11,676 kg reported in the fisheries in Lake Melville (SFA 1), northern (SFA 1) and southern Labrador (SFA 2) in 2005 during the open water fishing season. The total numbers of charr and trout landed in Labrador are unknown as there is no reporting system for fish caught either through the ice in the winter/spring or by recreational fishing in summer. Food fishery landings of charr and trout in Labrador are listed in Table 6 for those years of available data.

TOTAL RETURNS TO RIVERS

Total returns of small and large salmon to rivers in Labrador with counting facilities are listed in Table 7 for those years of available data. On the rivers with time series information, declines were observed for small and large salmon on Forteau Brook (1994-97), increasing small and large salmon for Sand Hill River (1970-73, 1994-96 and 2002-05) and increasing trends for small and large salmon at Southwest Brook (Paradise River, 1998-99, and 2001-05). Muddy Bay Brook showed an increased trend in the number of small salmon; whereas, large salmon returns decreased from the previous two years. Returns of small and large salmon show a declining trend at English River (1999-2004); however, in 2005 small salmon returns increased to levels not seen since 2000. For Sand Hill River in 2005, the number of small and large salmon increased to numbers higher than all of the years with available data. Small salmon have increased on Southwest Brook; whereas, large salmon have remained similar to 2004; however, remaining higher than all other years.

ENVIRONMENTAL DATA

Daily water flow rates on Alexis River for most of June in 2005 were near the minimum daily flows, increasing to mean flows at the end of June. The daily water flow rate then fluctuated between the mean and minimum daily flows until mid July. Daily flows remained at minimum flow rates for the third week in July then it spiked to maximum levels at the last week in July. For the first two weeks of August water flows were at mean water flow rates or slightly above. During the third week in August there was a high water event with the water flow rising to maximum water flows rates. Near the end of August, early September, the water flow fell to mean rates. During the second and third week of September water levels were slightly above the minimum water levels then briefly increasing to mean water flow rates followed by a decrease to minimum rates into the fall (Fig. 4). At the beginning of June the daily water flows on Eagle River in 2005 were below the mean for daily water flows. The water flow rates continued to decline to minimum levels from the end of the first week in June to the end of June. For the month of

July until the third week in August the water flow were between the mean and minimum rates. Near the end of August the water levels increased to maximum levels and then declined to mean water flow rates during the second week of September staying slightly below mean rates into the fall (Fig. 3). On June 1, daily flow conditions on Ugjoktok River in 2005 were decreasing to the mean water flow rate and steadily declined to minimum water flow levels until the second week of August, with the exception of a slight increase above minimum levels during the forth week of June. During the third week in August, water flow rates began to increase to maximum levels and then slowly decreased to mean water flow rates for the remainder of the month of September (Fig. 4). The daily water flow rates for the Naskaupi River in 2005 show a decrease to the mean water flow rate and to minimum water flow levels and remaining there until the second week of August, with the exception of a slight increase above minimum levels during the forth week of June. During the third week in August, water flow rates began to increase to maximum levels and then slowly decreased to mean water flow rates for the remainder of the month of September (Fig. 5).

SALMON RIVERS IN LABRADOR

Anderson (1985) lists 120 rivers in Labrador from the southern border with Quebec to Cape Chidley. A summary is provided here along with estimates of rearing and drainage areas for all known salmon rivers including some omitted by Anderson (1985). There are some rivers that were left out of this list, i.e. Barge Bay Brook and Southwest Tributary of White Bear River that will be added in the future as more information becomes available. Of these, there currently are about 77 rivers with salmon that have a drainage area bigger than about 50 km^2. In Labrador some of these rivers have only salmon in them whereas others have a mix of Atlantic salmon, brook trout and Arctic charr. The survey information from these rivers if available are detailed in Table 8.

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Table 1. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 1, Labrador, 1974-2005. Ret. = retained fish; Rel. = released fish.

	Effort	Small (<63 cm)			Large (>= 63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Total	Ret.	Rel.	Total	Ret.	Rel.	Total	CPUE
1974	801	347	.	347	311	.	311	658	.	658	0.82
1975	245	379	.	379	117	.	117	496	.	496	2.02
1976	922	891	.	891	368	.	368	1259	.	1259	1.37
1977	809	688	.	688	533	.	533	1221	.	1221	1.51
1978	704	875	.	875	432	.	432	1307	.	1307	1.86
1979	1367	905	.	905	430	.	430	1335	.	1335	0.98
1980	780	704	.	704	232	.	232	936	.	936	1.20
1981	422	669	.	669	195	.	195	864	.	864	2.05
1982	831	834	.	834	379	.	379	1213	.	1213	1.46
1983	834	488	.	488	137	.	137	625	.	625	0.75
1984	1074	702	.	702	222	.	222	924	.	924	0.86
1985	946	642	.	642	135	.	135	777	.	777	0.82
1986	741	421	.	421	129	.	129	550	.	550	0.74
1987	1011	854	.	854	141	.	141	995	.	995	0.98
1988	1629	1278	.	1278	171	.	171	1449	.	1449	0.89
1989	1296	1269	.	1269	144	.	144	1413	.	1413	1.09
1990	1245	563	.	563	115	.	115	678	.	678	0.54
1991	1056	130	.	130	8	.	8	138	.	138	0.13
1992	899	283	29	312	335	0	335	618	29	647	0.72
1993	422	121	124	245	22	25	47	143	149	292	0.69
1994	1036	453	933	1386	114	96	210	567	1029	1596	1.54
1995	880	500	854	1354	92	97	189	592	951	1543	1.75
1996	879	260	62	322	50	17	67	310	79	389	0.44
1997	1266	300	133	433	46	25	71	346	158	504	0.40
1998	813	256	448	704	61	109	170	317	557	874	1.08
1999	954	350	353	703	109	97	206	459	450	909	0.95
2000	1103	363	801	1164	79	232	311	442	1033	1475	1.34
2001	962	352	681	1033	75	130	205	427	811	1238	1.29
2002	651	129	482	611	28	140	168	157	622	779	1.20
2003	1032	174	777	951	36	633	669	210	1410	1620	1.57
2004	768	116	1152	1268	24	582	606	140	1734	1874	2.44
2005*	986	192	1044	1236	36	192	228	228	1236	1464	1.48

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS BASED ON RETAINED + RELEASED FISH FOR 1992 - 2005 AND ON RETAINED FISH ONLY PRIOR TO 1992.
2005 - DATA PRELIMINARY

Table 2. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 2, Labrador, 1974-2005. Ret. = retained fish; Rel. = released fish. DFO data from 1974-93 and Licence Stub Return System from 1994-2005.

	Effort	Small (<63 cm)			Large (>= 63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Total	Ret.	Rel.	Total	Ret.	Rel.	Total	CPUE
1974	1978	1414	.	1414	201	.	201	1615	.	1615	0.82
1975	1784	2524	.	2524	56	.	56	2580	.	2580	1.45
1976	2331	2337	.	2337	152	.	152	2489	.	2489	1.07
1977	2507	2244	.	2244	160	.	160	2404	.	2404	0.96
1978	3131	1243	.	1243	152	.	152	1395	.	1395	0.45
1979	1817	2312	.	2312	60	.	60	2372	.	2372	1.31
1980	1692	2158	.	2158	320	.	320	2478	.	2478	1.46
1981	1423	2824	.	2824	105	.	105	2929	.	2929	2.06
1982	2290	1999	.	1999	162	.	162	2161	.	2161	0.94
1983	2294	1884	.	1884	161	.	161	2045	.	2045	0.89
1984	2057	1246	.	1246	103	.	103	1349	.	1349	0.66
1985	1756	1367	.	1367	59	.	59	1426	.	1426	0.81
1986	2310	1972	.	1972	154	.	154	2126	.	2126	0.92
1987	2750	2625	.	2625	277	.	277	2902	.	2902	1.06
1988	2875	2653	.	2653	288	.	288	2941	.	2941	1.02
1989	2986	2242	.	2242	264	.	264	2506	.	2506	0.84
1990	2607	1680	.	1680	144	.	144	1824	.	1824	0.70
1991	2427	1041	.	1041	36	.	36	1077	.	1077	0.44
1992	2813	1599	158	1757	208	10	218	1807	168	1975	0.70
1993	3600	1340	1255	2595	114	36	150	1454	1291	2745	0.76
1994	3296	1437	2242	3679	263	201	464	1700	2443	4143	1.26
1995	3221	1232	2005	3237	234	256	490	1466	2261	3727	1.16
1996	3966	1405	2591	3996	210	324	534	1615	2915	4530	1.14
1997	3688	1335	1293	2628	112	123	235	1447	1416	2863	0.78
1998	3941	1011	2201	3212	170	354	524	1181	2555	3736	0.95
1999	4529	1329	3229	4558	211	496	707	1540	3725	5265	1.16
2000	5332	1480	4169	5649	183	461	644	1663	4630	6293	1.18
2001	4635	1151	2984	4135	263	891	1154	1414	3875	5289	1.14
2002	4754	1328	3050	4378	179	377	556	1507	3427	4934	1.04
2003	3885	1274	3022	4296	186	398	584	1460	3420	4880	1.26
2004	4786	1228	3836	5093	235	698	934	1450	4577	6027	1.26
2005*	3973	1261	3789	5050	256	524	780	1517	4313	5830	1.47

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS BASED ON RETAINED + RELEASED FISH FOR 1992-2004 AND ON RETAINED FISH ONLY PRIOR TO 1992.
2005 - DATA PRELIMINARY
**COMBINATION OF LICENSE STUB, DFO AND CAMP DATA. (1974 - 1993 IS DFO AND CAMP DATA ONLY)

Table 3. Atlantic salmon recreational fishery catch and effort data for Salmon Fishing Area 14B, Labrador, 1974-2005. Ret. = retained fish; Rel. = released fish. DFO data from 1974-93 and Licence Stub Return System from 1994-2005

	Effort	Small (<63 cm)			Large (>= 63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Total	Ret.	Rel.	Total	Ret.	Rel.	Total	CPUE
1974	2713	740	.	740	291	.	291	1031	.	1031	0.38
1975	2180	1069	.	1069	154	.	154	1223	.	1223	0.56
1976	3896	2498	.	2498	310	.	310	2808	.	2808	0.72
1977	3918	1662	.	1662	593	.	593	2255	.	2255	0.58
1978	2413	573	.	573	183	.	183	756	.	756	0.31
1979	2149	901	.	901	119	.	119	1020	.	1020	0.47
1980	2476	938	.	938	337	.	337	1275	.	1275	0.51
1981	3353	1698	.	1698	220	.	220	1918	.	1918	0.57
1982	3279	1271	.	1271	80	.	80	1351	.	1351	0.41
1983	3529	2000	.	2000	130	.	130	2130	.	2130	0.60
1984	3997	987	.	987	185	.	185	1172	.	1172	0.29
1985	3664	1092	.	1092	100	.	100	1192	.	1192	0.33
1986	4643	1071	.	1071	184	.	184	1255	.	1255	0.27
1987	4993	1887	.	1887	215	.	215	2102	.	2102	0.42
1988	5707	1592	.	1592	251	.	251	1843	.	1843	0.32
1989	4895	1173	.	1173	53	.	53	1226	.	1226	0.25
1990	5075	1066	.	1066	98	.	98	1164	.	1164	0.23
1991	4017	1152	.	1152	49	.	49	1201	.	1201	0.30
1992	4630	856	64	920	238	0	238	1094	64	1158	0.25
1993	5296	1047	414	1461	242	30	272	1289	444	1733	0.33
1994**	4117	659	506	1165	78	50	128	737	556	1293	0.31
1995**	3618	761	443	1204	82	155	237	843	598	1441	0.40
1996**	4348	900	1123	2023	74	148	222	974	1271	2245	0.52
1997**	3440	730	761	1491	*	418	418	730	1179	1909	0.55
1998**	3534	864	1109	1973	*	351	351	864	1460	2324	0.66
1999**	2109	397	825	1222	*	338	338	397	1163	1560	0.74
2000**	4210	718	2125	2843	*	753	753	718	2878	3596	0.85
2001**	2389	546	975	1521	*	447	447	546	1422	1968	0.82
2002**	3346	614	1520	2134	*	461	461	614	1981	2595	0.78
2003**	3136	664	1125	1789	*	295	295	664	1420	2084	0.66
2004**	2748	464	980	1993	*	239	364	493	1864	2357	0.65
2005**	2654	371	1149	1520	*	254	254	371	1403	1774	0.67

IN THE ABOVE TABLE A PERIOD INDICATES NO DATA FOR THAT YEAR.
CPUE IS BASED ON RETAINED + RELEASED FISH FOR 1992-2005 AND ON RETAINED FISH ONLY PRIOR TO 1992.
*NOT ALLOWED TO RETAIN LARGE SALMON IN SFA 14B, 1997-2005.
**DATA OBTAINED FROM THE LICENSE STUB RETURN (2005 DATA ARE PRELIMINARY).

Table 4. Atlantic salmon recreational fishery catch and effort data for Labrador (SFA 1, 2, and 14B), 1974-2005. Ret. = retained fish; Rel. = released fish. DFO data from 1974-93 and Licence Stub Return System from 1994-2005. (2005 data preliminary)

	Effort	Small (<63 cm)			Large (>= 63 cm)			Total (Small + Large)			
Year	Rod Days	Ret.	Rel.	Total	Ret.	Rel.	Total	Ret.	Rel.	Total	CPUE
1974	5492	2501	.	2501	803	.	803	3304	.	3304	0.60
1975	4209	3972	.	3972	327	.	327	4299	.	4299	1.02
1976	7149	5726	.	5726	830	.	830	6556	.	6556	0.92
1977	7234	4594	.	4594	1286	.	1286	5880	.	5880	0.81
1978	6248	2691	.	2691	767	.	767	3458	.	3458	0.55
1979	5333	4118	.	4118	609	.	609	4727	.	4727	0.89
1980	4948	3800	.	3800	889	.	889	4689	.	4689	0.95
1981	5198	5191	.	5191	520	.	520	5711	.	5711	1.10
1982	6400	4104	.	4104	621	.	621	4725	.	4725	0.74
1983	6657	4372	.	4372	428	.	428	4800	.	4800	0.72
1984	7128	2935	.	2935	510	.	510	3445	.	3445	0.48
1985	6366	3101	.	3101	294	.	294	3395	.	3395	0.53
1986	7694	3464	.	3464	467	.	467	3931	.	3931	0.51
1987	8754	5366	.	5366	633	.	633	5999	.	5999	0.69
1988	10211	5523	.	5523	710	.	710	6233	.	6233	0.61
1989	9177	4684	.	4684	461	.	461	5145	.	5145	0.56
1990	8927	3309	.	3309	357	.	357	3666	.	3666	0.41
1991	7500	2323	.	2323	93	.	93	2416	.	2416	0.32
1992	8342	2738	251	2989	781	10	791	3519	261	3780	0.45
1993	9318	2508	1793	4301	378	91	469	2886	1884	4770	0.51
1994	8449	2549	3681	6230	455	347	802	3004	4028	7032	0.83
1995	7719	2493	3302	5795	408	508	916	2901	3810	6711	0.87
1996	9193	2565	3776	6341	334	489	823	2899	4265	7164	0.78
1997	8394	2365	2187	4552	158	566	724	2523	2753	5276	0.63
1998	8288	2131	3758	5889	231	814	1045	2362	4572	6934	0.84
1999	7592	2076	4407	6483	320	931	1251	2396	5338	7734	1.02
2000	10645	2561	7095	9656	262	1446	1708	2823	8541	11364	1.07
2001	7986	2049	4640	6689	338	1468	1806	2387	6108	8495	1.06
2002	8751	2071	5052	7123	207	978	1185	2278	6030	8308	0.95
2003	8053	2112	4924	7036	222	1326	1548	2334	6250	8584	1.07
2004	8302	1808	5968	8354	259	1519	1904	2083	8175	10258	1.24
2005	7613	1824	5982	7806	292	970	1262	2116	6952	9068	1.19

Table 5. Total salmon food fishery landings adjusted by subarea for non-licences, 1999-2005.

	Small salmon		Large salmon		Total	
	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
SFA 1						
1999	2,739	5,580	1,084	4,220	3,824	9,800
2000	4,111	8,111	1,092	4,365	5,203	12,474
2001	3,394	6,995	1,299	5,121	4,708	12,117
2002	3,609	7,386	1,015	4,441	4,624	11,827
2003	4,382	9,094	1,639	7,026	6,021	16,120
2004	4,822	10,038	2,210	8,656	7,032	18,694
2005	4,958	10,116	1,687	6,930	6,644	17,046
SFA 2						
1999	-	-	-	-	-	-
2000	1,212	2,242	260	897	1,472	3,139
2001	1,396	2,793	374	1,378	1,770	4,172
2002	2,197	4,196	422	1,549	2,619	5,745
2003	2,095	4,102	536	1,885	2,632	5,987
2004	3,480	7,166	1,450	5,480	5,050	12,852
2005	5,479	10,922	1,130	3,946	6,609	14,868
All areas						
1999	2,739	5,580	1,084	4,220	3,824	9,800
2000	5,323	10,353	1,352	5,262	6,675	15,613
2001	4,789	9,789	1,673	6,499	6,478	16,288
2002	5,806	11,581	1,437	5,990	7,243	17,572
2003	6,477	13,196	2,175	8,912	8,653	22,108
2004	8,302	17,204	3,660	14,136	12,081	31,546
2005	10,436	21,038	2,817	10,876	13,253	31,914

Table 6. All trout and charr food fishery landings adjusted by subarea for non-reporting and non-used licences, 2001-05.

	Charr		Trout		Total (Charr + Trout)	
	Number	Weight (kg)	Number	Weight (kg)	Number	Weight (kg)
SFA 1						
2001	4,226	6,092	12,122	9,568	16,348	15,660
2002	7,175	13,442	10,567	9,816	17,742	23,258
2003	6,574	9,726	8,028	6,355	14,602	16,081
2004	6,282	8,924	8,363	6,547	14,644	15,471
2005	6,880	12,246	9,562	7,557	16,442	19,803
SFA 2						
2001	5,147	5,156	10,467	7,647	15,614	12,803
2002	7,126	6,994	10,861	8,774	17,987	15,768
2003	5,043	5,322	6,410	5,264	11,453	10,586
2004	4,272	4,815	4,666	3,720	8,939	8,535
2005	4,069	4,518	5,126	4,119	9,195	8,637
All areas						
2001	9,373	11,248	22,589	17,215	31,962	28,463
2002	14,301	20,436	21,428	18,590	35,729	39,026
2003	11,616	15,048	14,438	11,619	26,055	26,668
2004	10,554	13,739	13,029	10,267	23,583	24,006
2005	10,949	16,764	14,688	11,676	25,637	28,440

Table 7. Summary of total returns to rivers in Labrador. Total returns include angling catches below counting facilities plus counts from counting fence or mark–recapture population estimate.

	Forteau Brook		Pinware River		Sand Hill River		Paradise River and Southwest Brook				Muddy Bay Brook		Big Brook		English River	
Year	Small	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small	Large	Small	Large
1970					3600	138										
1971					3596	266										
1972					2038	175										
1973					4761	504										
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1994	458	77			2180	730										
1995	461	147			2796	560										
1996					3319	414										
1997	223	56	874	179									530	104		
1998									110	4						
1999							4681	491	331	43			790	194	59	48
2000													982	151	367	15
2001									321	32					224	41
2002					3155	567			235	34	106	11			190	31
2003					3157	621			158	16	394	31			133	19
2004					4108	605			615	54	454	28			56	25
2005					7007	875			858	54	520	20			337	28

Table 8. Drainage areas, parr habitat and potential adult production for Labrador rivers including references. Numbers in bold type are estimated from SFA totals. [1] indicates that drainage basin has been re-surveyed and is different than in Anderson (1985). Rivers in bold and italic have angling data for some years but not all years.

No.	River	SFA	Region	Total Watershed Drainage (km^2)		Parr rearing habitat		Egg requirement (million)	Potential adult production	Reference
				Total	Accessible	Accessible (units)	Inaccessible (units)			
1	***Ferteau Brook***	14B	Straits shore	389	324	5515	1097	10479	5000	1, 13
2	***Lance aux Loup Brook***	14B	Straits shore	130	94	936	359	1778	281	1
3	***Pinware River***	14B	Straits shore	2636	2140	46691	10808	88713	14007	1, 2, 14
4	Wiseman Brook	14B	Straits shore	14	14	**291**	***0***	553	***87***	0,2
5	Black Bay Brook	14B	Straits shore	79	79	**1641**	***0***	3118	***492***	0,2
6	Temple Brook	2	Southern	181	136	2311	***940***	4391	693	1
7	St. Peters River	2	Southern	140	16	65	510	124	20	1
	Subtotal SFA 14B	**14B**	**Straits shore**	**3569**	**2803**	**57450**	**137140**	**109155**	**20581**	
8	***St. Charles River*** [1]	2	Southern	321	321	6237	0	11850	1871	2,1
9	***Mary's Hr River*** [1]	2	Southern	458	458	6526	0	12399	1958	2,1
10	Hoop Pole Brook[1]	2	Southern	58	58	***831***	***0***	1580	***249***	0,2
11	***St. Lewis River*** [1]	2	Southern	2428	673	13723	35814	26074	4117	2,1
12	Port Marnham Brook	2	Southern	142	142	***2035***	***0***	3867	***611***	0,2
13	Deer Harbour	2	Southern	84	84	***1204***	***0***	2288	***361***	0,2
14	Notleys Brook	2	Southern	49	49	***702***	***0***	1334	***211***	0,2
15	Bobby's Brook	2	Southern	245	167	1360	641	2584	408	1
16	Black Water Brook	2	Southern	135	135	1935	0	3676	580	2,0
17	***Alexis River*** [1]	2	Southern	3112	912	8919	21522	16946	2676	2,1
18	***Shinneys Waters*** [1]	2	Southern	202	202	1020	0	1938	306	2,1
19	***Gilbert River*** [1]	2	Southern	594	0	0	3238	0	0	2,5
20	***Brook of St. Michael's Bay***	2	Southern	50	50	***713***	***0***	1355	***214***	0,2
21	Seven Mile Pond River (River 14)	2	Southern	98	98	2128	0	4043	638	5
22	***White Bear Arm River***	2	Southern	233	233	4053	0	7701	1216	5
23	Peters Brook (River 16)	2	Southern	45	45	833	0	1583	250	5
24	***Hawke River***	2	Southern	1891	1891	46366	0	88095	13910	5
25	Caplin Bay Brook	2	Southern	150	150	1591	0	3023	477	5
26	Partridge Bay Brook	2	Southern	70	70	872	0	1657	262	5
27	Shoal Bay River 20	2	Southern	119	119	1067	0	2027	320	5
28	Shoal Bay Brook	2	Southern	18	18	581	0	1104	174	5
29	River 22	2	Southern	13	13	340	0	646	102	5
30	Black Bear River	2	Southern	645	645	7921	0	15050	2376	5
31	Open Bay Brook	2	Southern	39	39	360	0	684	108	5
32	Porcupine Harbour River	2	Southern	155	33	368	1381	699	110	5
33	River 26	2	Southern	70	70	252	0	479	76	5
34	Reeds Pond Brook	2	Southern	233	233	3175	0	6033	953	5

Table 8 Cont'd.

No.	River	SFA	Region	Total Watershed Drainage (km^2)		Parr rearing habitat		Egg requirement (million)	Potential adult production	Reference
				Total	Accessible	Accessible (units)	Inaccessible (units)			
35	***Sand Hill River*** [1]	2	Southern	1603	1509	53154	5503	100993	***15946***	9
36	Muddy Bay Brook [1]	2	Southern	344	261	***3741***	***1190***	7108	***1122***	2,8
37	Paradise River	2	Southern	5778	5778	56425	0	107208	16928	2,6
38	***Eagle River***	2	Southern	10824	9793	111516	***5576***	211880	***33456***	5,6
39	Southwest Brook	2	Southern	525	525	***7525***	***0***	14297	2257	0
40	***White Bear River***	2	Southern	1021	1021	22228	0	42233	6668	6,1
41	North River [1]	2	Southern	2215	2215	***31748***	***0***	***60321***	***9524***	8
	Subtotal SFA 2	**2**	**Southern**	**33967**	**28008**	**401450**	**74864**	**762755**	**120437**	
42	Flatwater Brook	1A	Lake Melville	299	299	***5966***	***0***	***11336***	***1790***	8
43	English River	1A	Lake Melville	640	33	662	12286	1258	199	3
44	Kenemich River	1A	Lake Melville	699	699	11570	0	21983	3471	3
45	Kenamu River	1A	Lake Melville	4403	4403	***87856***	***0***	166927	16500	10
46	Traverspine River	1A	Lake Melville	728	613	19749	3714	37523	5925	3
47	Churchill River	1A	Lake Melville	93415	1062	***21191***	***1842783***	40263	***6357***	0,11
48	Goose River	1A	Lake Melville	3432	1938	33560	25865	63764	10068	4
49	Cape Caribou River	1A	Lake Melville	546	546	14922	0	28352	4477	3
50	Beaver River	1A	Lake Melville	1878	1624	46251	7245	87877	13875	3
51	Susan River	1A	Lake Melville	363	363	11166	0	21215	3350	3
52	Naskaupi River	1A	Lake Melville	12691	1269	***25323***	***227909***	48114	***7597***	1,9
53	Crooked River	1A	Lake Melville	2391	2391	46836	0	88988	14051	3
54	Sebaskachu River	1A	Lake Melville	580	580	1893	0	3597	568	3
55	Mulligan River	1A	Lake Melville	1062	1062	9902	0	18814	2971	5
	Subtotal SFA 1A			**123127**	**16881**	**336847**	**21198020**	**640010**	**91199**	
56	***Double Mer***	1B	Northern	1425	1425	19502	0	37054	5851	5
57	Partridge Point Brook (River 49)	1B	Northern	855	855	18635	0	35407	5591	5
58	***Tom Luscombe Brook***	1B	Northern	1010	1010	***15831***	***0***	30078	***4749***	8
59	West Brook	1B	Northern	149	149	***2335***	***0***	4437	***701***	8
60	Middle Brook	1B	Northern	323	323	***5063***	***0***	9619	***1519***	8
61	53/54 Pottles Bay River	1B	Northern	135	135	***2116***	***0***	4020	***635***	8
62	55 Byron Bay River	1B	Northern	163	163	***2555***	***0***	4854	***766***	0
63	***Big Brook (Michaels River)***	1B	Northern	793	793	22059	0	41912	6618	4
64	Jeanette Bay Brook	1B	Northern	67	67	1523	0	2894	457	4
65	River 58	1B	Northern	13	13	***204***	***0***	387	***61***	0
66	Tukialik River	1B	Northern	47	47	684	0	1300	205	4
67	Pamiulik River	1B	Northern	493	493	14882	0	28276	4465	4
68	Stag Bay Brook	1B	Northern	155	155	4760	0	9044	1428	4
69	Rattling Brook	1B	Northern	285	285	11308	0	21485	3392	4

Table 8 Cont'd.

No.	River	SFA	Region	Total Watershed Drainage (km^2)		Parr rearing habitat		Egg requirement (million)	Potential adult Production	Reference
				Total	Accessible	Accessible (units)	Inaccessible (units)			
70	***Big River***	1B	Northern	2849	2849	10879	0	20670	3264	4
71	Adlavik River	1B	Northern	233	233	7186	0	13653	2156	4
72	River 65	1B	Northern	39	39	533	0	1013	160	4
73	River 66	1B	Northern	29	29	***455***	***0***	864	***136***	7
74	Makkovik Brook	1B	Northern	111	90	2179	520	4140	654	4
75	Makkovik River	1B	Northern	259	259	5231	0	9939	1569	4
76	South Brook	1B	Northern	399	399	3270	0	6213	981	4
77	Kaipokok River	1B	Northern	2499	2242	24006	2756	45611	7202	4
78	English River	1B	Northern	545	125	2686	6087	5103	3032	4,12
79	River 72	1B	Northern	399	399	840	0	1596	252	4
80	Kanairiktok River	1B	Northern	12274	0	0	133109	0	0	4
81	Little Bay River	1B	Northern	244	244	***3824***	***0***	7266	***1147***	0
82	River 75	1B	Northern	475	475	***7445***	***0***	14146	***2234***	0
83	***Adlatok (Ugioktok) River***	1B	Northern	11106	8070	130000	48918	247000	39000	4
84	***Hunt River***	1B	Northern	1344	1344	24657	0	46848	7397	3
85	River 78	1B	Northern	338	338	***5298***	***0***	10066	***1589***	0
86	***Flowers River***	1B	Northern	1443	1443	29084	0	55260	8725	3
87	Rivers 80/81	1B	Northern	310	310	***4859***	***0***	9232	***1458***	0
88	Sango Brook	1B	Northern	806	685	15561	2745	29566	4668	0
	Subtotal SFA 1B			**41615**	**25485**	**399449**	**1941350**	**758954**	**122062**	
	Total			**202278**	**73178**	**1195196**	**24025160**	**2270873**	**354279**	

0 No habitat or obstructions surveys assumed 100% accessible
1 Anderson (1985)
2 Kelly (2003)
3 Murphy and Porter (1974)
4 Murphy (1973)
5 Murphy (1972)
6 Murphy (1971)
7 Murphy obstructions survey (unpublished)
8 Peet (1971)
9 Reddin 1997 (unpublished data)
10 Riche (1965)
11 NF Hydro Survey
12 English River project survey data
13 Lowe and Mullins 1996 CSAS Res. Doc. 96/87
14 Mullins and Caines 1998 CSAS Res. Doc. 98/116

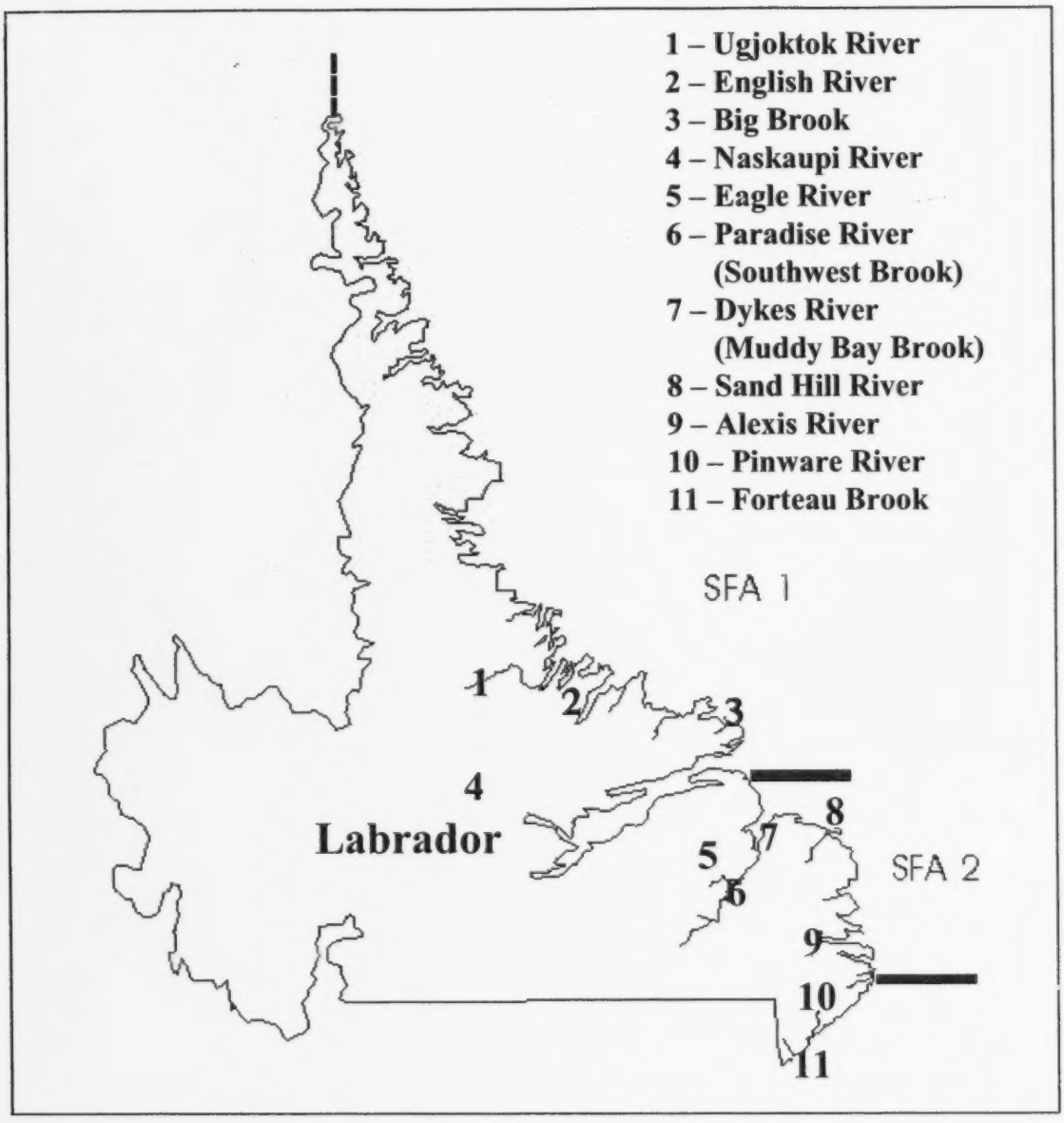

Figure 1. Labrador showing generalized locations of Salmon Fishing Areas and rivers mentioned in the text.

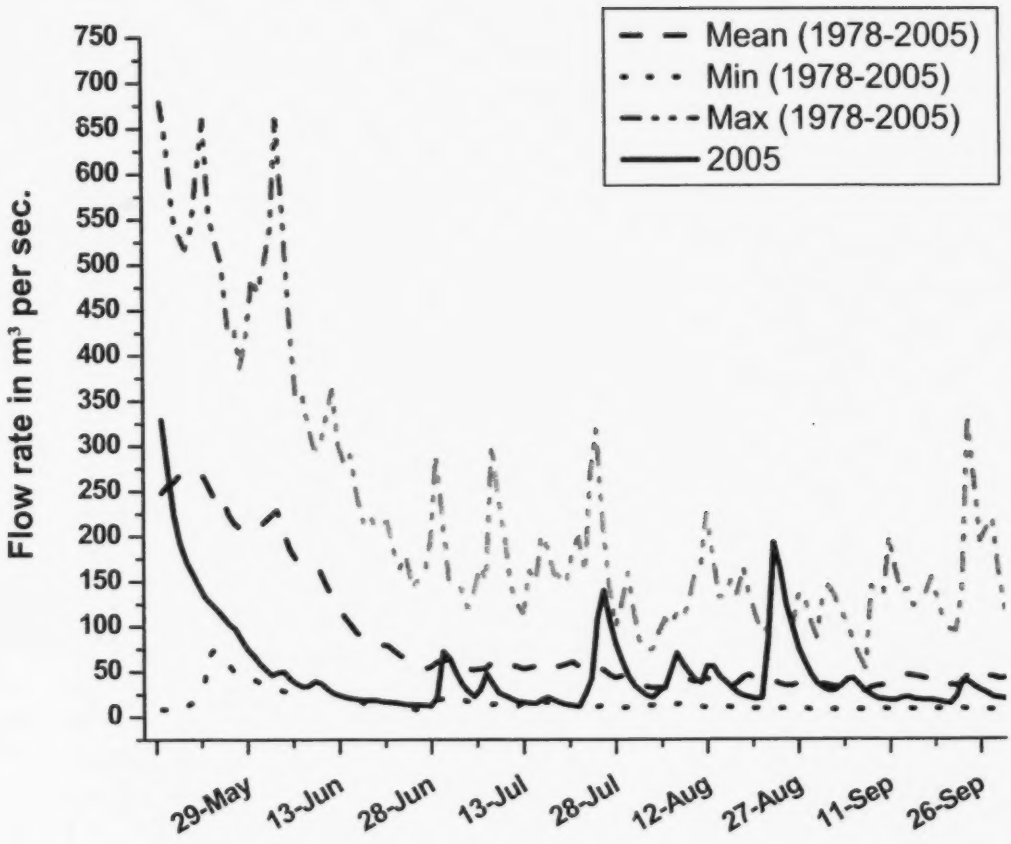

Figure 2. Flow rates for Alexis River indicating mean, minimum and maximum flows for 1978-2005, with a comparison to the flow rates in 2005.

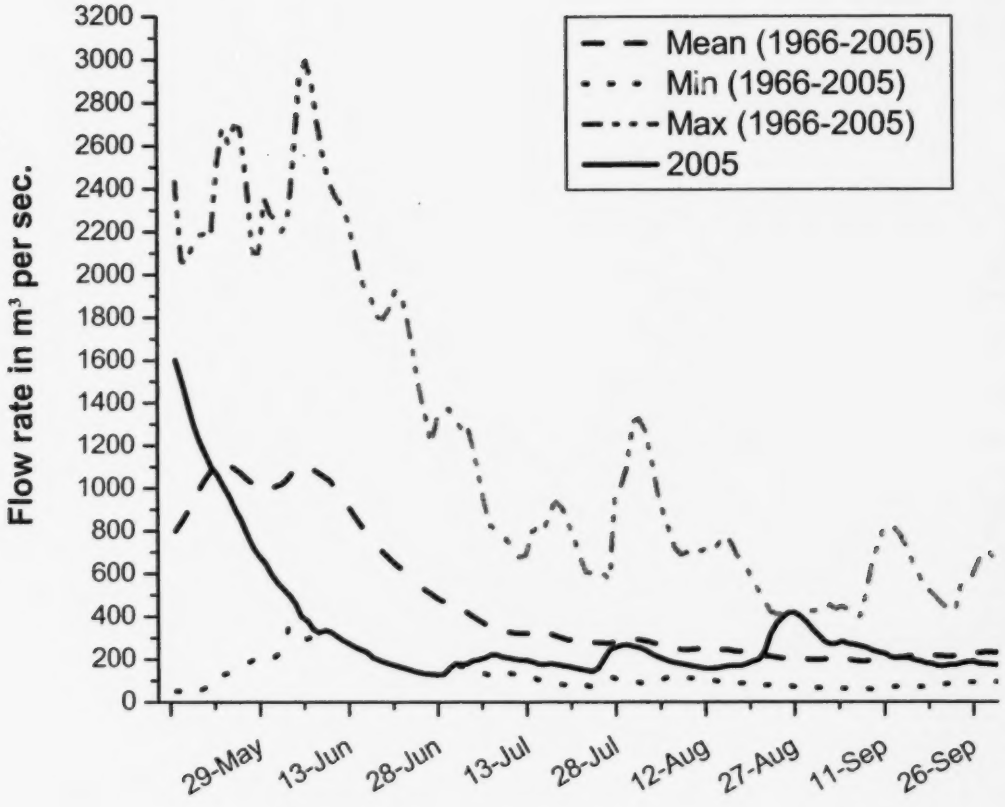

Figure 3. Flow rates for Eagle River indicating mean, minimum and maximum flows for 1966-2005, with a comparison to the flow rates in 2005.

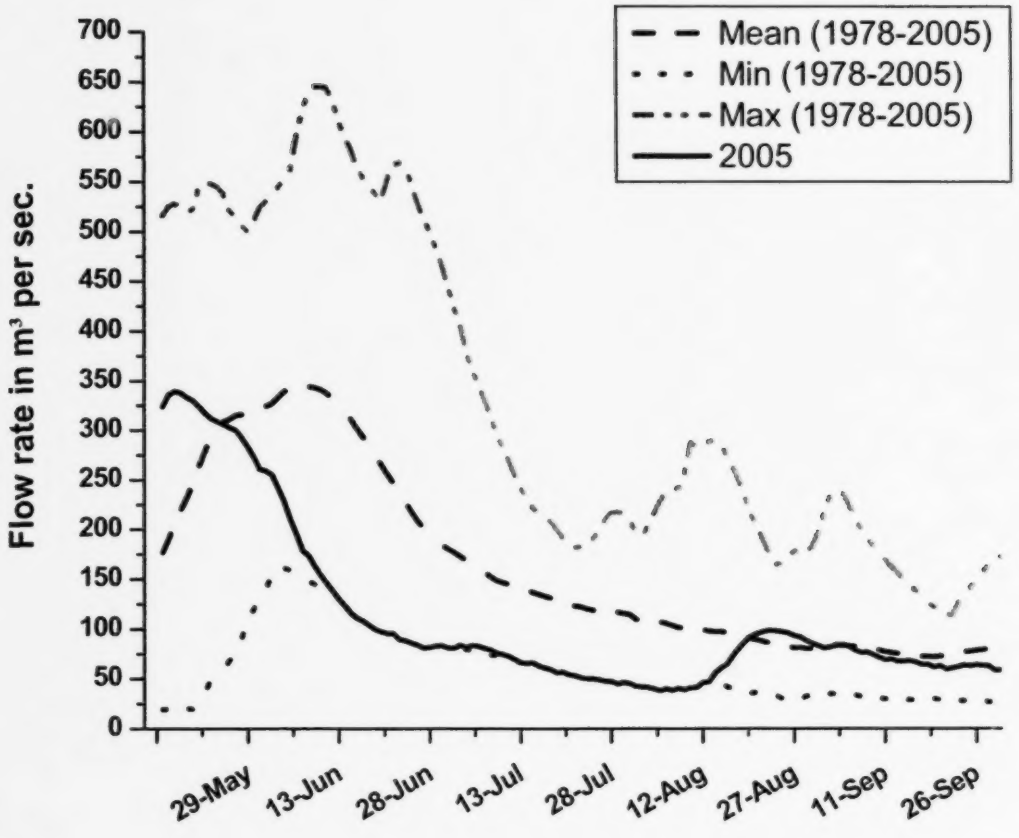

Figure 4. Flow rates for Naskaupi River indicating mean, minimum and maximum flow for 1978-2005, with a comparison to the flow rates in 2005.

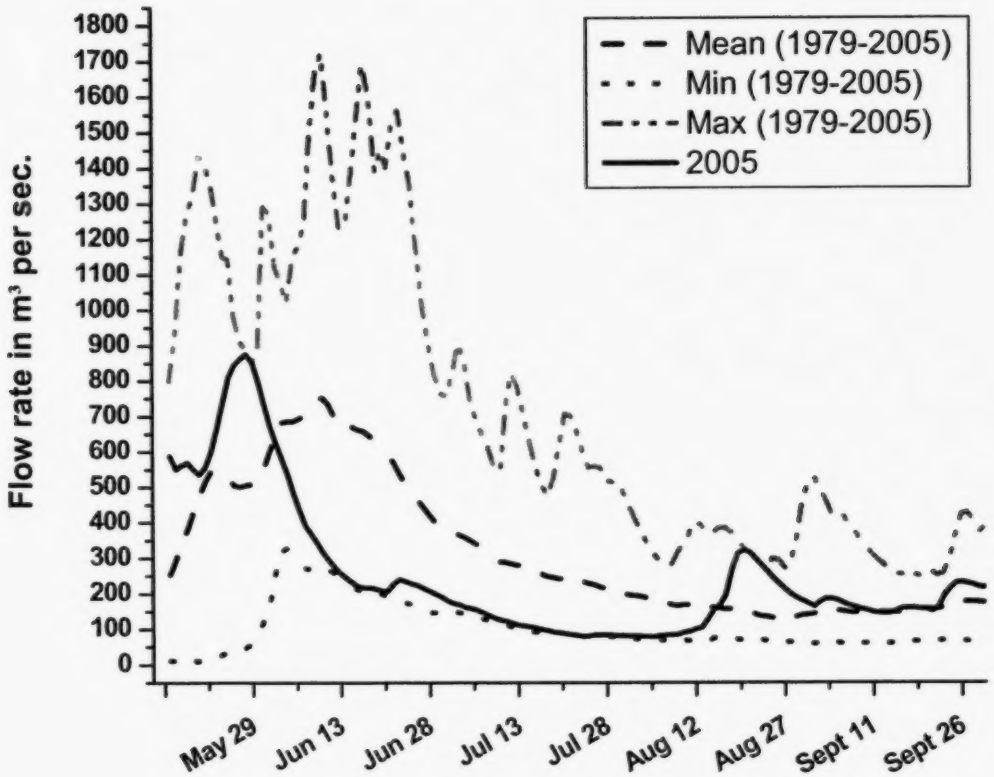

Figure 5. Flow rates for Ugjoktok River indicating mean, minimum and maximum flows for 1979-2005, with a comparison to the flow rates in 2005.